

Notice of Allowability

Application No.

09/228,772

Applicant(s)

BENESTY ET AL.

Examiner

Art Unit

Daniel Swerdlow

2644

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed 20 December 2004.
2. ☒ The allowed claim(s) is/are 3-10 and 13-20.
3. ☐ The drawings filed on _____ are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☒ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☒ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 12/20/04
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

To correct a status identifier, Claim 15 is amended to read as follows:

15. (presently amended) A robust echo canceller comprising:

an adaptive filter for outputting an error signal in response to a detected echo

signal; and

means for supplying adaptive filter coefficients to said filter, wherein said filter

coefficients are given by the formula: $h_{n+1} = h_n + \mu G_n X_n R_{xx}^{-1}(n) [\varphi(|e_n|) \odot \text{sign}(\{e\}_{\frac{e_n}{|e_n|}})]$ wherein h_n

is the estimated echo path; μ is the overall step size parameter; G_n is the step-size matrix; X_n is

the excitation matrix; R_{xx}^{-1} is the correlation matrix; $|e_n|$ is the mean error; \odot denotes elementwise

multiplications; and ~~$\{e_n\}$ is a sample of echo signal~~ e_n is a residual echo vector.

Drawings

2. In the course of prosecution, applicant submitted changes to the drawing sheets for Figs. 1 and 2. In reviewing the application file, examiner notes that a compliant replacement sheet for Fig. 1 is not present. Applicant's response of 1 June 2004 contained duplicate compliant replacement and annotated sheets for Fig. 2, but no sheets for Fig. 1. Applicant should submit

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this compliant replacement sheet with the legend "Replacement Sheet" in the top margin of the paper as viewed in portrait orientation.

3. Figs. 6 through 32 contain spurious figure numbers in the captions. These should be deleted.

4. **The following is an examiner's statement of reasons for allowance:**

5. Claims 4, 6, 8, 10, and 13 through 16 are allowable for reasons stated in the prior Office action, mailed on 27 July 2004.

6. Regarding Claim 3, as shown in the prior Office action mailed on 27 July 2004, the combination of Kanemasa et al. (US Patent 4,621,172) and Duttweiler (US Patent 5,951,626) makes obvious all elements except the reduction of impact of undetected doubletalk by control of the adaptive scaled non-linearity through connection of the doubletalk detector to the modifying means. As such the prior art neither anticipates nor fairly suggests all elements of the claim as amended. Therefore the claim is allowable.

7. Claim 4 is allowable due to dependence from Claim 3.

8. Claims 5, 17 and 19 contain limitations similar to that stated above apropos of Claim 3 and are allowable for the same reasons.

9. Claims 9, 18 and 20 are allowable due to dependence from their respective base claims.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel Swerdlow whose telephone number is 703-305-4088. The examiner can normally be reached on Monday through Friday between 8:00 AM and 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh H. Tran can be reached on 703-305-4040. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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15 March 2005



SINH TRAN
SUPERVISORY PATENT EXAMINER